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Editorial.—With this issue we publish the first of several papers by Dr. J. T. Rothrock upon the Modes of Work in de Bary's Laboratory at Strassburg That they will be read with interest by our workers in Anatomy and Physiology is but natural; for they will be a description of one of the most famous laboratories in the world, by one of our most skillful investigators.

DR. ASA GRAY, in a private letter from Kew Gardens, assures us that he is not resting from labor, but is busier than ever. With the change of a word, he uses the old quotation, *cælum non laborem mutant qui trans mare currunt.*

CONTRIBUTORS must exercise some patience in waiting for the appearance of their articles. The GAZETTE is getting to be quite popular and no contributor can now be certain of an immediate place in our pages. If, then, two or three months pass without a sign from us no alarm need be felt, for everything will be worked in in its own time, and the appearance will condone for much delay. This is not meant to stop the flow of contributions, for we would like it to be steadier and stronger than it is now, but as a word of explanation to many of our friends who may by this time have lost all patience with us.

MR. H. H. RUSBY'S article on the Ferns of New Mexico has been sent to us through the kindness of the Syracuse Botanical Club, Mrs. F. J. Myers, Secretary. This organization of ladies is unwearying in study and exploration.

MR. LUCIEN M. UNDERWOOD, of Bloomington, Ill., has published a neat check list of North American PTERIDOPHYTA, excluding the Orders *Filices* and *Ophioglossaceæ*. Order *Equisetaceæ* contains 13 species; *Lycopodiaceæ* 12; *Selaginellaceæ* 6; *Isoetaceæ* 14; *Marsiliaceæ* (three genera) 7. The author states that the list is merely preliminary and that he will be glad to receive specimens and notes, that a full account of native PTERIDOPHYTA may be prepared.

PROF. MARCUS E. JONES, of Salt Lake City, Utah, has published his list of Utah plants. Prof. Jones is an indefatigable collector and his plants are very desirable. The coming season he will botanize through Utah, Nevada, California and Arizona.

PROF. W. G. FARLOW has just published a paper, with plates, upon the Gymnosporangia or Cedar-Apples of the U. S. An early review of it may be expected in the GAZETTE.

IN THE LAST PART of the second volume of *Beitrage zur Biologie der Pflanzen* are some important papers on fungi and Bacteria, and one on physiology. Dr. Just has been experimenting on the action of high temperatures on the preservation and germination of seeds. He finds that perfectly dry seeds can withstand a temperature of even 120°

and 125° Cent. without injury. Dr. Koch gives directions for the preparation of specimens of bacteria.

MR. G. BENTHAM has presented the Linnean Society a contribution containing the results of his study of the *Orchideæ*. He groups them into five tribes and twenty-seven sub-tribes.

FRANCIS DARWIN, in a recent number of *Nature* gives a review of Dr. Hermann Muller's work on Alpine Flowers. Of course the relation of Alpine Flowers to insects is the burden of the book, which must be an extremely interesting one. One of the most striking facts is that in Alpine regions butterflies predominate, largely replacing the Hymenoptera of the lowlands. With this change of guests must come a change in structure, for a corolla that will admit a bee, will by no means necessarily be fertilized by the proboscis of a Lepidopterous insect. Thus, members of the same genus will have open mouthed corollas in the lowlands, and contracted throats in the Alpine regions, may be with no opening but the minute "butterfly-door." The relation existing between the colors of flowers and insect visits is also considered and is by no means the least readable part of the book.

Notes on Modes of Work in the Laboratory of Prof. de Bary in Strassburg, Germany. I.—There are two reasons why some statements under the above heading might be of service in our country: first, because of the simplicity of the appliances used in one of the most productive botanical laboratories abroad, and second, because the modes of investigation, though not entirely unknown or untaught here, merit a wider diffusion.

Taking up the first of these reasons, we may say that microscopy, simple and pure, has done good work here in getting us instruments of great efficiency at lower rates than formerly, but has proved so attractive that it has lured to itself absolutely many who might well bestow a portion of their time on real biological investigation. Indeed, it has even gone further and, by some means, induced a feeling, on the part of those contemplating the purchase of a microscope, that they will wait until they can obtain one of the highest grade. This reminds one of a physician resolving to go on foot until he can drive two horses, ignoring the fact that one might render him essential service, to start with, at least. There is ordinarily no objection to the most costly instrument (save its size,) and it is, beside, supposed to be fitted for all manner of work; but on the other hand, it is to be remembered that nearly all (not to say all) the best botanical work has been done in Europe with extremely cheap microscopes, i. e., a mere stand with good eye-pieces and good objectives. And I may also add that Robert Brown's work was done in part, if not entirely, with a simple microscope, and that the recent solid contribution to American biological literature. *Leidy's Rhizopods*, was made with the little Hartnach, and the Beck Economic Microscopes. So then I make this statement at the outset, that for fifty dollars one may purchase an American Microscope which will do as good work as those found in European Laboratories. On my table lies a cut of a Zentmeyer instrument, named by him the American Student Stand, with 1 Eye-

piece (A or B); 8-10 objective, 24°; 1-5 objective, 75°; and Walnut Case, which, with Lock and Handle, is sold at $38. There are other instruments at as low, or nearly as low prices, which are also capable of doing as good original work. Now then I will make the direct statement. If you contemplate purchasing a microscope, do not delay until you can purchase the most complicated. You will be astonished when you come to discover the real capacity of such as I have indicated.

The instruments most in use in the laboratory of Prof. de Bary are those of Hartnach, small, compact, without sub-stage or without joint to turn the tube back. The optical parts are of course good and give a magnifying power of about six hundred diameters.

MEANS OF MAKING SECTIONS. Razors alone are used. These may or may not be flat on one side. The knife which we have here specially made for the purpose is not requisite, and therefore an unnecessary cost. Neither do we find *in use* the expensive section holders, which figure so conspicuously on the tables of our amateurs. As a means of holding a small soft specimen, pith taken from any plant which furnishes it more than half an inch in diameter is sufficient, and is much better than cork, which is often used in the English laboratories, as the latter often contains grit enough to dull the razors. The cylinder of pith is simply cut down the middle and in pieces sufficiently long to be comfortably held by the thumb and finger, and the object is placed between. Or, for very small, precious objects, a few drops of stearine are allowed to fall from a candle on a glass slide, then, when cool, the object placed upon it, and a few drops more placed on top and the whole allowed to harden, then by *slightly* warming the slide, the mass may be removed and held as in the case of the pith. The adhering stearine has the advantage of being readily removed by alcohol from the section. As for the object, it is safe to assert that the custom is to make it as thin as possible, and always much thinner than we are accustomed to make it here. As a rule, the mounting medium is glycerine, and no attempt is made at staining or double staining. To make a permanent mounting of a desirable preparation, the Asphalt cement of Neumann & Son, Berlin, 51 Tauben Strasse, is used, and to prevent this from being loosened by the contraction of the cement as it hardens, a very fine thread of glass is placed under one side of the cover glass. After considerable trial I am very well satisfied a much better mode is to either make a thin ring of a strong solution of gum shellac in alcohol and allow it to harden an d then mount as before, or to make the first coat, at least, of this and then place a subsequent coat of Asphaltum over this when it has hardened. I am bound to say that I have used no American cement that I did not like as well as that of Neumann, though, from the fact of its being in use in all the laboratories of Europe, it must have decided merit. It hardens very quickly. For durability, however, one cannot well forget the decided statement of Dr. Carpenter, that, after thirty years experience and trial of gold size, he had come to prefer it.

For the softer, thinner tissues there can be no doubt but the Euro-

pean glycerine mount is better than that in Canada balsam, which we more commonly use. There is a greater sharpness of outline given to the object. Among the instruments we miss from the German Laboratories is the polarizer as a common microscopic adjunct. For the study of starch and for tracing the laticiferous vessels in many cases, it is of the most essential service. The Jackson eye piece micrometer gives way to the simple round disk in the eye-piece and for all practical purposes is quite as good and much less expensive. It is fair to say that, among lower plants, the same reliance we place upon *exact* spore measurements is not found; the evidence based upon them being considered as confirmatory rather than conclusive; and probably with good reason. During the short winter days a large portion of the work done is by the aid of well shaded gas light, the intensity of which is more or less modified by colored chimneys; the flamee being round and steady from the Argand burner. All theory aside, I cannot see but that it was as good as that from the coal oil which we insist upon as being essential.—J T. ROTHROCK.

Some New Mexican Ferns. I.—In order that we should gain a correct knowledge of the flora of any section, some knowledge of its soil and climate is essential; a proposition which would seem to apply specially to the ferns.

The whole of New Mexico is a table-land, with superimposed mountains. The country along the rivers is usually very sandy, as are some of the plains between the mountain ridges. Others of these plains are gravelly, while others consist of a fine, deep soil, which, however, is always mixed, more or less, with gravel. So far as my observation goes, no ferns whatever grow in any of these localities. They are to be found only in the mountains. I have not found one fern growing on level ground, or in sandy or alluvial soil. Under these circumstances, we should expect to find the general character of the ferns very different from that of our eastern species. The difference is allowed to become still greater by the great difference in climate. Here, when it rains, it does little else, and when it dries, everything dries, and keeps on drying until it begins to rain again. Not having been here in the spring, I have been unable to gain any exact information as to the extent to which the ferns develop at that season. The most that I have been able to learn is that when there is an abundance of rain or snow during the winter and spring, the ferns spring up. Certain it is, that before the beginning of the rainy season in July, they are all as dry, and apparently dead, as though there had been no period of spring growth. Within a month after the beginning of the rains, they have made a good start, and within another month, the most of them have shown considerable fruit. A few, however, do not mature their spores until late in the fall, appearing to banter Old Winter with the challenge, "Catch me if you can!" These conditions combine to strip the ferns of that freshness and delicacy, or, I may say, that *crisp fragility*, which characterize our eastern species. Those which are not hairy or scaly are thickish and glaucous. The only eastern species that I can now recall as likely to give one an idea of the *tout ensemble* of these species is *Cheilanthes vestita*, Swz., or, to a

slight extent, *Aspidium aculeatum*, Swz , var. *Braunii*. The only one that I have found here to remind me in any way of those at home is a new variety of *Woodsia Oregana*, D. C. Eaton. These species are also peculiar in their dwarf habit. The majority of them never reach a height of one foot, while the extreme height of the two largest species is about two feet.

The whole number of species which I have found here is fourteen, all having been collected in Grant county. Beginning with *Cheilanthes*, I find six species, one of them, *referring to the segments*, smooth, two scaly, one hairy, and two both scaly and hairy. The smooth species is *C. Wrightii*, Hooker, which I have found in very small quantity, in a single locality, in two dense patches. This is on the sloping side of a very high mountain (a little over 7,000 feet), exposed to the very brightest sunshine, and rooting in partially decomposed, shelly sandstone. It is the smallest of my ferns, being but three or four inches in height, and very pretty. It is thickish, and almost coriaceous. The most beautiful portion of this fern is it stalk, which is of a very rare color,—a sort of a deep, shining bronze-brown. A dense cluster of these stalks looks brilliant in the sunshine. The lower part of the stalk is chaffy. This fern fruits during the middle of the season, that is during October.

Cheilanthes lanuginosa, Nutt., growing in the Northern Central States, is probably well known to most of you. It is very pretty here, growing in dense, though small tufts, in little hollows and crevices of perpendicular rocks, where there seems to be no soil whatever, and always on the north side, where no sun can ever reach it. It is one of the earliest ferns to fruit.

Cheilanthes Eatoni, Baker, the commonest and most abundant species, is one of the most beautiful. The largest specimens reach a height of a foot, and the fronds are so abundantly clothed with tomentum as to present a silvery white appearance. The mid rib only is scaly, so that when held to the light there is nothing to obscure the view of the minute and delicate segments, surrounded with their circles of silvery hairs Happy Mr. Eaton. to have his name associated with so beautiful a fern. and happy fern to be so connected with such a botanist! It grows everywhere among rocks, flourishing best in moderate shade.

Cheilanthes Fendleri, Hooker, is the scaly species. When first found, my companion named it "The Hard Green Fern," from the compact and bright-green appearance of the fronds. It grows in large but not dense patches, on hillsides, in gravel and in moderately shady situations. So slight is its articulation that is difficult to remove the dirt from specimens without knocking off all the fronds The color of the scales is said to be "white, changing to brown." I would add that when mature they again fade to a white ; but it is a grayish-white, easily distinguished from the almost pure white of those on young fronds. It fruits in November being one of the latest species.

Two interesting species I find which I think are *C. myriophylia*, Desvaux, and *C. Lindheimeri*, Hooker. The former I have found within a day or two, but in such an aged state that even the determination is doubtful. I do not know its time of fruiting.

C. Lindheimeri presents a very striking appearance, which is not easily mistaken or forgotten. It is best described by my companion's homely name of "The Flat White Fern." The upper surface is very white, very flat, and very compact as to the arrangement of the segments. The under surface is at first whitish, changing to a rusty brown, and later, to a silver gray. Its habit of growth is as peculiar as its appearance. It flourishes in shade or in sunshine, but best in moderate sunshine, and does not grow at all in constant shade. Wherever a mass of great jagged rocks is observed, there this fern may be looked for with an almost certainty of finding it. It always grows in the dirt which has lodged in the crevices of rocks, and these crevices it completely fills, so that a hook being inserted in the upper end of the crevice, a rope or strip of ferns, sometimes yards in length, may be torn up. As it is very late in fruiting, many fronds being without fruit as late as December, it has occurred to me that it selects these situations for the sake of the heat afforded during the night by the adjacent rocks. This may be called "The Sensitive *Cheilanthes*", as the pinnæ curl almost as soon as the plant is removed from the soil. Having removed even as few as ten specimens, it is difficult to press them in time to save them all.

Three *Pellæas* have been found, the first being our old friend, *P. atropurpurea*, Link, which grows near the bottoms of canons, in very shady positions, and which reaches its greatest perfection late in the fall, after the cold weather has begun. At this season I have found specimens more than twenty inches in height, and really stately in their beauty. It always selects a deep, rich soil. It fruits moderately early.

Pellæa Wrightiana, Hooker, is very different from the former species, very striking in its appearance, and very beautiful. I have found only a few exceeding ten inches in height. Half of this length is occupied by the dark brown, almost black stalk, which contrasts beautifully with the vivid bluish green, smooth fronds. The thick segments, before becoming recurved in fruit, are roundish, of the size of the head of a large tack, and tipped with a whitish, subulate point. They are arranged with great regularity. As the plant grows in the densest tufts, these segments are always hooked together in so intricate a manner that it is quite a task to separate them, and the fronds being very brittle, this is one of the most difficult ferns to collect in good specimens. It is always found on rocky hillsides, under the edges or in the crevices of rocks where there is but little earth, and where it can enjoy bright sunshine for a part of the day. It fruits during October.

Pellæa andromedæfolia, Fee, var. *pubescens*, is the only species except a *Notholæna*, which attains a height of two feet. The *Notholæna*, being very narrow, leaves this *Pellæa* the largest fern of this section. It is very scarce, being found in only a few localities, and there sparingly, so that I have been unable to secure enough specimens to supply all my sets. Notwithstanding its large size, it is very light and graceful in appearance, the segments being quite widely separated. These are roundish oblong, about one half an inch in length, of a light

glaucous green above, and a reddish glaucous green below. The stalks are reddish. It is invariably found in the deepest shade of underbrush, and usually growing up through dead brush. As it is exceedingly brittle, a strong puff of wind being sufficient to break off the tips when entangled, this habit of growing in brush makes it exceedingly difficult to secure entire specimens. I have been unable to secure more than one frond out of three in a presentable condition. It fruits during the middle of October, the fruit forming a deep black margin to the lightish colored segments.—HENRY H. RUSBY.

On the Colors of some Western Flowers.—There are a good many mistakes about them in the books *Cordylanthus Wrightii*, Gray, for example, is everywhere described as having a purplish corolla, whereas it is of a fine, light-sulphur yellow, which stands in showy contrast with the commonly rich, dark purple calyx which half encloses it.

Orthocarpus purpureo albus, Gray, is said to have corollas "purple and often partly white;" the truth being that they are always clear white on opening, and that after the first day they change to rose-purple.

In the January GAZETTE under *Ribes pinetorum*, Greene, I said that the flowers of *R. leptanthum*, Gray, are "white, not yellow, as said by Mr. Watson in Bot. King." But Mr. Watson writes to me that he has seen acres of it with yellow flowers. Now though the species occurs plentifully west of the Rocky Mountains I do not happen to have met with it but in Colorado and New Mexico, the locality whence it was first obtained, and I have never seen it but with white flowers, though there is usually a tip, or marking of decided green. The dubious var. *brachyanthum*, Gray, of California shows a tinge of purple. Will not our botanists in different parts of our western field take notice, the coming season, and all tell us through the GAZETTE what they find to be the color of flowers in *R. leptanthum?* Of course they may vary in different localities, but if this be the case, it should be established clearly.—EDWARD LEE GREENE.

Carnivorous Plants. IV.—EXPERIMENT NO. IX.—Placed upon the center of the disk of a very vigorous and large leaf a small crumb of bread made from wheat flour, at 2:45 P. M., June 11, '79.

30 min. a few of the submarginal tentacles had bent slightly.

90 " these tentacles were standing about at right angles with the plane of the surface of the blade of the leaf.

3 hrs. many of the marginal tentacles had moved some.

7 " a few of the submarginal tentacles were so inflected as to touch the specimen; also the marginal were much inflected.

10 " but little changed from the last note.

17 " all of the submarginal, marginal and outer disk tentacles had inflected to such a degree that nearly all of them touched the specimen; the edges of the leaf were also incurved greatly.

24 " leaf completely closed; substance of the bread soft and pulpy.

41 " there was apparently no further change.
47 " a few of the marginal tentacles had partly reflexed.
67 " the reflection was more marked but quite irregular, i. e., some of the tentacles were reflexed to a greater degree than others that commenced the reflex action at the same time; the substance upon the leaf was more liquid and not so opaque as at 24 and 41 hrs.
91 " all the tentacles were more or less inflexed but apparently were rapidly reflexing.
98 " there was but little change.
137 " many of the marginal tentacles were entirely reflexed; the outer disk and submarginal tentacles were, in the main, standing at an angle of 90° with the plane of the blade.
148 " mostly reflexed; tentacles and leaf were somewhat shrunken; substance formed a white incrustation on the disk; no secretion.
186 " the tentacles had again inflected slightly and one or two were so bent as to touch the remains of the bread *
220 hrs. the substance of the bread had turned a dark brown color.
244 " no trace of the bread remained.
388 " the tentacles were practically reflexed.
508 " the ends of the tentacles were somewhat dried and thus bent inward but the blade was natural; no secretion.
532 " there was but little change from the last note except that upon the tentacles that were not dried (some 5 or 6) the secretion had appeared.
580 " the whole leaf was nearly natural.
652 " the leaf, blade and tentacles, was natural with a copious secretion.

EXPERIMENT No. X.—A piece of fried steak was placed upon a leaf at 2:45 P. M., June 11, '79.

5 min. the submarginal tentacles and also the outer disk ones, for about ¼ the circumference of the leaf, had inflected and touched the meat; many of the remaining tentacles were much inflected.
30 " all of the submarginal tentacles had moved more or less.
17 hrs. all the tentacles had inflected and touched the specimen; the edge of the leaf was much incurved;
24 " the leaf was completely closed; meat white and pulpy.
68 " the tentacles were reflexing, a few being completely reflexed; the remaining part of the leaf not so soft as under 24 hrs.
92 " on one side all the tentacles had reflexed; on the other for about ⅓ the circumference of the leaf the tentacles were standing at an angle of 90° with the plane of the blade.
138 " the meat having dried had fallen off; tentacles were nearly all reflexed, and apparently somewhat dried.
162 " the leaf had assumed nearly it natural form.

*The cause of this secondary inflection I cannot assume to assert positively although it seems probable that in watering the plant the remains of the bread were soaked thus revealing some nourishment that had not already been absorbed.

286 " in all respects the leaf was natural as to the position of its parts.†

EXPERIMENT No. XI.—A drop of reagent acetic acid ($HC_2H_3O_2$–sp. gr. 1.04) was placed upon a leaf at 3:45 P. M., June 17, '79.

15 min. the solution had assumed the color of the leaf; 4 or 5 submarginal tentacles were inflected.

25 " many of the third row of tentacles had inflected so as to touch the drop of acid.

45 " all of the submarginal tentacles were inflected more or less; the spot where the acid was placed was somewhat depressed, the acid itself had disappeared.

75 " nearly all the submarginal and many of the marginal tentacles had inflected and touched the spot where the acid had been placed.

16 hrs. the whole leaf somewhat withered, the tentacles except the marginal still inflected as in the last note; leaf yellow.

25 " the marginal tentacles had all reflexed assuming the normal position; leaf apparently dead.

146 " the whole leaf was withered and dead.*

Maryland Fungi. I.—In the vicinity of Baltimore, Maryland, the months of June and July. 1880, were comparatively poor in fleshy fungi The very mild winter and early spring seemed to give promise that the coming season would yield an abundant harvest; but in the early summer several heavy rain storms either destroyed the mycelium or interfered with its development. The mycelium of a fungus is exceedingly delicate and plants are often exterminated from its having in some way been roughly dealt with. A m derate amount of atmospheric heat and moisture is all that is necessary to produce an abundant crop of fungi, an excessive amount of either will cause an almost entire failure. That they often fail us in the requirement of heat is proved by some coming in very cold weather. The largest and most perfect specimens of *Coprinus comatus*, Fr, that I ever saw came as late as December. As a further instance of their Arctic taste, showing the severity of the weather, a bucket of water that stood beside them was coated over with ice. They grew in a flower garden among the perishing and withered phænogamous plants which with the exception of a few very hardy ones had ceased to bloom.

In the early part of June, *Phallus Dæmonum*, Rumph., appeared about twenty yards from the spot where I found it in June 1878, but it was dwarfed in size. In the January number of the GAZETTE, 1880, I published a description of this plant under the name *Phallus duplicatus*, Bosc. The deep reticulated veil deceived me. After the publication of my article a very kind friend informed me of my mistake. *Phallus impudicus*, L., came a few days later, large and perfect. These plants are very imposing in appearance and generally select open

†The secretion did not appear on the tentacles until 24 hrs. after the last observation.

*The peculiar fact connected with this experiment is that while the submarginal and disk tentacles seemed to inflect and then become paralyzed and incapable of reflex action, those of the marginal row not only inflected but afterwards reflexed. The acid was rather too strong for a favorable observation of its true action upon the leaf.

places in woods. I have met with them beside highways that intersected densely wooded districts. The passer-by is attracted not only by their stately proportions but by their terrible odor. In consequence of their well merited reputation for loathsomeness we have reason to congratulate ourselves that they are never plentiful. One dozen plants would make a neighborhood uninhabitable. Crowds of flies generally hover around ready to devour the, to them, tempting gelatine with which they are enveloped. Beetles devour them rapidly, but insects with suctorial mouths seem to clean them up and put them in better trim for the collector. *Corynites Ravenelii*, B & C. which is also a member of this very interesting family of fungi termed *Gasteromycetes*, order *Phalloidei*, has appeared in the woods near Baltimore for the past five years, but never in large quantities. It rarely measures over 5 inches in height, but it is rendered attractive by its bright pink or red color. The spores are external and the apex is perforated as in *Phallus*, but it differs from it in having a pileus or hymenium confluent with the stem. It generally comes in the early part of June and continues at intervals until the last of August. It has an exceedingly disagreeable odor. One plant in a room is sufficient to disgust the olfactory nerves. The spores of these plants are in liquid and therefore cannot be carried through the air by the wind. What if we have an entomophilous division in fungi? Their fetid odor accompanied by a feast of gelatine is doubtless as necessary to them in the way of attracting insects, and thus disseminating their spores, as bright colors and honeyed nectaries are to flowers in the way of insect fertilzation.

In June and July the only plants that appeared in anything like profusion were *A.* (*Nancoria*) *semiorbicularis*, Bull., and *Russula virescens*, Fr. The latter with one or two exceptions was remarkably perfect in configuration and color. The same might be said of the former which crowded into lawns, giving among other evidence of its identity a stipe which had a distinct and separable pith. Its small hemispherical or expanded pileus, smooth, viscid and ochraceous, lights up the green grass on a lawn as if trying to compete with its more brilliant phænogamous neighbor, *Ranunculus bulbosus*.

In July I found several plants in the woods near Baltimore that I had never before met with. Some were new to science, others were not. Among the latter were *A.* (*Amanita*) *volvatus*, Peck, remarkable for the beautiful brown floccose edges of the lamellæ. *A.* (*Pleurotus*) *sapidus*, Kalch, grew in large imbricated bunches on an Oak stump. *A.* (*Psalliota*) *silvaticus*, Schæff, grew solitary and gregarious in open places in woods. This is quite a pretty fungus with not a very pleasant odor. It tasted strongly of bitter almonds.

A. (*Collybia*) *radicatus*, Relh., has generally been plentiful in all woods near Baltimore, but in July I found only one plant, that one was large and perfect. I do not know a more variable Agaric than this. The pileus is at times ochraceous, then various shades of brown, then bright yellow, then olivaceous, commonly 1½–2 inches across, smooth, scarcely umbonate, more or less glutinous; lamellæ adnate or with a decurrent tooth; stipe 3–4 inches high, pallid, often white, at times slightly striate, attenuated at the apex, more or less enlarged at

the base, rooting below. The perfect form is large, pileus fleshy 7–8 inches across, ochraceous with a brown and very decided umbo, rugose, excessively glutinous, cartilaginous and elastic; lamellæ sometimes edged with brown, adnate, forked, white, distant, thick, ventricose; stipe 7–9 inches high, cartilaginous, stuffed then hollow, reddish inside, twisted, splits with ease longitudinally, more or less furfuraceous, striate at the apex, reddish-brown at the base, pallid above, moist, attenuated at the apex, enlarged at the base, rooting deeply; spores .00040X.00052 in., white. I have never met with more than six of these plants that combined all the botanical characteristics.

In the early part of July I found for the first time in the woods near Catonsville, Baltimore County, *A.* (*Clitopilus*) *orcella*, Bull. This is a very delicate fungus in appearance. The size varies in different localities. The pileus is usually from one to two inches across, white to cream-color, sticky in wet weather, dry and kid-like in dry weather, irregularly lobed, margin smooth and undulated, at first incurved, lamellæ close, forked, adnate or sub-decurrent, the lengthened ones taper and terminate on the stipe, delicate salmon color; stipe short, solid, enlarged at the base, at first central, but as the fungus seems to grow more rapidly on one side than on the other it often becomes eccentric and is twisted laterally near the base; spores .00022X.00048 in., salmon colored.

In August I found this Agaric in Carroll County, measuring 3½ inches across the pileus and growing in decided rings. In September I again met with it on the Blue Ridge Mountains, growing in large rings, but generally small. Some plants had a powerful odor of new meal, others were not marked by any peculiar odor, but all tasted strongly of cucumbers. At first sight one might mistake it for *Lactarius piperatus*, Fr., but upon examination the absence of milk with other botanical characters render its recognition conclusive. Once recognized it is impossible to mistake it afterwards. It is edible, and if eaten as soon as gathered it makes a desirable dish to those who love mushrooms.

Coprinus micaceus, Fr., growing in large cæspitose bunches took possession of the roots of an old *Morus alba* tree about fifteen miles from Baltimore. I remarked that in every section of the State, wherever I found it, it came profusely. In August I met with it in Carroll, Frederick, Washington and Alleghany Counties. In every instance growing either at the roots or in the crevices of the bark of the *Morus alba*. The bark of this tree seems to form a favorite nidus. In Carroll County, the trunk of one tree was adorned at intervals with bunches of this delicate little fungus. The trunk of another tree looked like a dark-brown column wreathed with fungi; the pilei glittering with granules. One could scarcely realize that this beautiful wreath-like design was one of nature's freaks. The spores are black with an oblique apiculus, .0003X.00028 in.—MARY E. BANNING.

Recent Publications.—TRIMEN'S JOURNAL OF BOTANY, February.—The original articles are as follows: Conclusion of Mr. Richard Spruce's Musci Præteriti; Notes on Abbott's Herbarium, by R. A.

Pryor; A new Hong-Kong Melastomacea (*Otanthera Fordii*) by H. F. Hance; Notes or Shropshire Plants, by W. Beckwith; Third Suppl. to Ferns recorded in Grisebach's 'Flora of the British West Indies,' by G. S. Jenman. Among short notes are recorded several new stations for British plants. Among the Proceeding of the Linnean Society appears a short notice of Dr. Master's "Conifers of Japan," and Mr. Bentham's classification of the *Orchideæ*.

AMERICAN JOURNAL OF SCIENCE, March.—Dr. Asa Gray gives one of his very satisfactory reviews of Mr. Darwin's last work, "The Power of Movement in Plants." It is one of those reviews that are too long to re-publish entire and too good to be mutilated. The book is one that every botanist should read and the wonderful powers of the seedling root tip are totally unexpected. As Mr. Darwin says in conclusion: "It is hardly an exaggeration to say that the tip of the radicle thus endowed, and having the power of directing the movements of the adjoining parts, acts like the brain of one of the lower animals." Dr. Goodale follows with several notes, the longest being a notice of Baron Ferd. von Muller's *Eucalyptographia*.

TORREY BULLETIN, March.—Mr E. L. Greene emends the genus *Fendlera* so as to admit a new species which he names *F. Utahensis* It is the same plant that Mr. Watson named *Whipplea Utahensis*, but Mr. Greene after careful study of fresh material feels confident it is a *Fendlera*. Messrs. Ellis and Harkness describe several new Fungi, chiefly from New Jersey. Mr. G. Guttenberg has some notes on the Flora of Presque Isle, Pa.

THE VEGETATION OF THE ROCKY MOUNTAIN REGION, by Asa Gray and Sir J. D. Hooker.—We can but notice the receipt of this pamphlet, and promise a review in a subsequent GAZETTE.

CHECK LIST OF NORTH AMERICAN POLYPETALÆ, by Harry N. Patterson.—Mr. Patterson has compiled this list principally from Mr. Watson's Bibliographical Index. It makes 20 closely printed pages, with three columns to the page. Being a professional printer, of course the typographical work is all that could be asked. For terms see advertisment.

PROCEEDINGS OF THE DAVENPORT ACADEMY OF NATURAL SCIENCES, Vol. II, Part II and Vol. III, Part I.—These volumes reflect great credit upon the State, and the very enterprising academy that publishes them. So long as Dr. Parry is an active member, we may expect Botany to be well represented and so it is, with two of the ten plates being figures of *Lilium Parryi*, Watson.

A NEW WORK ON AMERICAN FERNS.—Mr. Lucien M. Underwood has prepared a book on our native Ferns. It is intended as a manual for self-instruction and its methods are similar to those adopted in the study of Flowering Plants. The price of the book is but one dollar. Address L. M. Underwood, Bloomington, Illinois.